Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service	)))))	ET Docket No. 95-18

JOINT REPLY COMMENTS OF THE ASSOCIATION FOR MAXIMUM SERVICE TELEVISION, INC. AND OTHER MAJOR TELEVISION BROADCASTING ENTITIES

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SUMMARY

This proceeding has presented the Commission with the task of accommodating mobile satellite services ("MSS") in the 2 GHz band while preserving the incomparably successful broadcast auxiliary services ("BAS") that support the universal and free, live and pervasive coverage of news and special events. In its Notice of Proposed Rulemaking, the Commission managed to do this by proposing to allocate spectrum for MSS, to allocate viable replacement spectrum for BAS, and to require MSS to fully compensate BAS operators for their expenses just as newcomers were required to compensate incumbents in the PCS emerging technologies proceeding. In our initial comments, MSTV and the Joint Commenters supported this proposal as properly balancing the parties' competing needs.

None of the other commenters seriously questioned BAS' intensive and growing use of 2 GHz band. Instead, some suggested that BAS be forced to operate on channels of radically reduced bandwidth so as to relieve MSS operators from paying the expenses their move into BAS spectrum would otherwise entail. These proposals are unsound and unfair. Although technical advances may permit some reduction in BAS channel widths, they are nowhere near allowing the 30% reduction envisioned by the MSS commenters. Such a reduction would destroy the quality of the broadcast auxiliary signal and would force the American public to pay the price, in less and worse news coverage, for the launching of MSS.

Furthermore, such a reduction would injure the ability of broadcasters to make the transition to digital advanced television without abruptly depriving the public of the television service on which it now relies.

Motorola's proposal also misunderstands the technical characteristics of BAS by asserting that broadcasters could conduct news gathering activities in the 7 and 13 GHz bands, contrary to experience and engineering evidence. Furthermore, the proposal unrealistically estimates the costs involved in moving BAS to the higher bands. Perhaps most significantly, Motorola's proposal suffers from an obscurity of purpose that is apparently even unrelated to MSS and therefore outside the purview of this proceeding. Motorola would have the Commission pursue a destructive course of taking spectrum away from a proven and hugely popular video service (BAS) and reserving it for purely speculative wireless video services of dubious value. The Commission should reject this proposal and reaffirm its commitment, reflected in its own principal proposal, to ensuring that BAS have the spectrum required to provide continuing and enhanced services to the public, without shifting to broadcasters the expenses that rightfully belong to the MSS new entrants. Had MSS been allocated spectrum as originally contemplated in the PCS emerging technologies proceeding, MSS operators would have been compelled to pay the costs of relocating incumbents. They should remain subject to that obligation here.

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The Association for Maximum Service Television, Inc. ("MSTV"), and the Association of America's Public Television Stations, Capital Cities/ABC, Inc., CBS Inc., Chris-Craft/United Television Stations Group, the National Association of Broadcasters, National Broadcasting Company, Inc., Public Broadcasting Service, and the Radio-Television News Directors Association ("RTNDA") (the "Joint Commenters") hereby file joint comments in reply to the comments filed in response to the Notice of Proposed Rulemaking, ET Docket No. 95-18, released in the above captioned docket on January 31, 1995 (the "Notice").

INTRODUCTION

In its initial comments, MSTV and this same coalition of other major television broadcasting entities supported a Commission proposal to reallocate the 1990-2025 MHz band to mobile satellite services ("MSS") premised upon moving the incumbent broadcast auxiliary services ("BAS") to

the 2110-2145 MHz band. A fundamental component of the Commission's proposal and the premise of our position was that MSS operators would be required to pay the costs associated with relocating incumbent BAS to higher frequencies in the 2 GHz band. Such an approach accords with the Commission's established precedent in the emerging technologies (or PCS) docket and should be adhered to here if the relocation of incumbent BAS proves necessary. See Notice, at ¶¶ 7-8; Comments of MSTV and Other Major Television Broadcasting Entities, ET Docket No. 95-18 (May 5, 1995) ("Joint Comments").

The Commission's proposed transition plan, see Notice, at ¶¶ 10-12, reflects basic principles of fairness and equity in requiring MSS providers to "bear the costs associated with relocating the existing BAS operations to the 2110-2145 MHz band." Id. at ¶ 10. Because of the critical importance of the 1990-2110 MHz band to television broadcasters, any proposal to reallocate the 1990-2025 MHz band to MSS must be coupled with a firm commitment to accommodate BAS in viable spectrum and a realistic transition plan.[1/]

[1/] Such a plan should include the following provisions: MSS providers should shoulder all costs associated with the relocation, including those related to the relocation of the services currently operating in the 2110-2145 MHz band; the new facilities should be state-of-the-art and fully comparable to the existing facilities; and incumbent services must be successfully relocated from the 2110-2145 MHz band before broadcasters are required to vacate the 1990-2025 MHz band and (continued...)

Of the many comments that parties filed in response to the Notice, virtually none challenges the basic principles underlying the Commission's main proposal: that broadcasters heavily use the 1990-2110 MHz band to support a variety of important BAS operations, on which all of the public relies, and that the integrity of these operations should not be adversely affected by any new MSS spectrum allocations. Nor do the comments raise serious questions regarding a second major premise: that any relocation plan for BAS incumbents should ensure that they are not forced to bear the costs associated with relocation, including retrofitting equipment (costs that would arise from a relocation plan designed solely for the benefit of would-be MSS providers).[2/]

[1/](...continued)
relocate to the 2110-2145 MHz band. The Commission's proposed transition plan incorporates all of these concepts and, consequently, we endorse it. See Notice, at ¶ 11; see also In the Matter of Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies (Third Report & Order), 8 FCC Rcd. 6589, 6591, 6602-04 (1993); In the Matter of Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies (First Report & Order), 7 FCC Rcd. 6686, 6890 (1992).

[2/] See, e.g., Comments of APCO, ET Docket No. 95-18, at 9-10 (May 5, 1995); Comments of the API, ET Docket No. 95-18, at 13-15 (May 5, 1995); Comments of the Association of American Railroads, ET Docket No. 95-18, at 2-4 (May 5, 1995); Comments of COMSAT, Inc., ET Docket No. 95-18, at 12-14 (May 5, 1995); Comments of Creative Broadcast Techniques, Inc., ET Docket No. 95-18, at 6-8 (May 5, 1995); Comments of the Society of Broadcast Engineers, ET Docket No. 95-18, at 7-8 (May 5, 1995). Four commenters questioned whether new users should pay the full costs of the incumbent's relocation. See Comments of Personal Communications Satellite Corp., ET Docket No. 95-18, at 6-11 (May 5, 1995); Comments of Iridium, Inc., ET Docket No. 95-18, at 1-3 (May 5, 1995); Comments of
(continued...)

However, some of the comments filed by the MSS industry reflect gross misconceptions of broadcasters' BAS needs in today's analog environment and tomorrow's analog and digital environment, BAS technology's future capabilities, and the constraints under which terrestrial BAS operates. MSTV and the Joint Commenters believe that it is not feasible to reduce substantially BAS spectrum in the 2 GHz band, or even more radically, to move BAS out of the 2 GHz band. Such a course of action would ruin the quality and breadth of the vital electronic news gathering ("ENG") efforts BAS supports. See Joint Comments, ET Docket No. 95-18, at 4-18.

I. ENACTING PROPOSALS TO SHRINK BAS CHANNELS TO 12 MHZ WOULD DEPRIVE BAS OPERATIONS OF SUFFICIENT BANDWIDTH TO PRODUCE HIGH QUALITY VIDEO.

The Notice's primary proposal with respect to the reallocation of BAS spectrum rests on two basic principles, which are not seriously contested: (1) that broadcasters and the public they serve rely heavily and more and more intensively on the 1990-2110 MHz band; and (2) that MSS and BAS cannot successfully share spectrum. The practical implication of point one is that allocations for MSS must take

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2(...continued)
Motorola, Inc., ET Docket No. 95-18, at 22 (May 5, 1995); Comments of TRW, Inc., ET Docket No. 95-18, at 5-9 (May 5, 1995). Of these four dissenters, only PCSAT questioned the basic relocation policy (i.e., the premise that MSS providers should bear some responsibility for relocating displaced incumbents).

into account broadcasters' sharply increasing BAS demands.[3/] Rather than addressing this fact head on, some MSS entities simply propose to shrink BAS channel sizes, incanting the mantra that "BAS operators should use the 2 GHz spectrum more efficiently."[4/] MSTV and the Joint Commenters note at the outset that the broadcast industry has continued to develop ever more spectrum efficient technologies and that there is little doubt that the future will bring even greater efficiency gains.[5/] The question is not whether broadcasters will make more efficient use of the 2 GHz band, but rather whether the types of efficiency gains envisioned by some of the MSS commenters (e.g., reducing the BAS channel bandwidth from 17 MHz to 12 MHz in the next decade) are even remotely possible. Such reductions would yield unacceptable degradation of the broadcast signal or equally unacceptable reduction in news and special event coverage.

[3/] See Joint Comments, ET Docket No. 95-18, at 4-10. Broadcasters' use of auxiliary spectrum in the 2 GHz band is growing at a rate of 15%. Increasing demand results in extreme congestion, and sometimes reduction of coverage during special or breaking news events. A recent study of BAS frequency coordinators in the top 25 markets, attached to the Joint Comments, reveals that all coordinators find the 2 GHz BAS band congested and 78% believe there is not enough spectrum for auxiliary digital advanced television operations. See Id.

[4/] See, e.g., Comments of Celsat, ET Docket No. 95-18, at 7-10; Comments of COMSAT, ET Docket No. 95-18, at 11-15; Comments of Motorola, ET Docket No. 95-18, at 19-20.

[5/] See Joint Comments, ET Docket No. 95-18, at 15-17; Comments of the SBE, ET Docket No. 95-18, at 8.

There is a consensus among broadcast engineers -- those with the greatest experience and know-how in these matters -- that such gains are simply not possible given the large data capacity required to support a high definition image and the technical constraints imposed by the terrestrial transmission environment.[6/] Thus, although spectrum savings due to advances in BAS technology can be expected over the next decade, policymakers should be realistic about the net effects of such gains, keeping in mind that BAS spectrum will have to carry more data to accommodate advanced digital television and that broadcasters will have to transmit both analog and digital broadcast auxiliary signals for some time.

The first step in understanding the realities of BAS is to understand digital compression. Analog broadcast auxiliary signals generally use at least 17 MHz bandwidth channels to transmit an analog NTSC picture and sound. Digital compression techniques may, over time, allow broadcasters to transmit the same data using somewhat smaller channels (15 or 16 MHz-wide channels), though the approximately 30% reduction in bandwidth contemplated by COMSAT's and TRW's calls for 12 MHz BAS channels is wildly unrealistic.[7/] When data is compressed into narrower channels, the video quality degrades significantly; taking the

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[6/] See, e.g., Comments of the SBE, ET Docket No. 95-18, at 4-7.

[7/] See Attached Engineering Statement of Jules P. Cohen, at 2-4 (June 15, 1995) (hereinafter "Exhibit A").

broadcast auxiliary transmission through the editing, post-production, and retransmission processes magnifies this degradation sometimes so much that the picture quality is no longer acceptable to the average television viewer.[8/]

The advent of digital television will increase the data load that will have to be compressed. ATV-related BAS transmissions will require channel widths large enough to accommodate the immense data capacity required to transmit high definition television. A high definition picture has five times more information than does an NTSC picture.[9/] Absent digital compression, BAS operations supporting ATV broadcasts would require significantly more bandwidth per channel than existing analog BAS operations.[10/] At most, digital compression will enable broadcasters to obtain contribution quality video in support of high definition broadcasts using channels with bandwidths no wider, or perhaps

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[8/] See id.

[9/] The present system of NTSC television delivery requires a data rate for contribution quality network and internal distribution of approximately 45 megabits per second (Mb/s). See Exhibit A, at p. 3. High definition television systems, on the other hand, will require a much higher data capacity, on the order of 320 to 760 Mb/s. Id. Use of a 12 MHz channel, as proposed by several MSS commenters, would necessitate a data rate made possible only by an unacceptably high compression of the video/audio data stream, in combination with excessively fragile modulation schemes for successful mobile and field use. Id. at 4.

[10/] See Comments of the SBE, at 5 ("Digitizing an analog signal increases rather than decreases the required bandwidth.").

somewhat narrower, than those presently used for analog transmissions.

Broadcasters will have to contend with increased BAS use as well as increased data demands. The transition to digital broadcasting on the main channel will markedly increase the traffic on BAS frequencies. Moreover, these ATV related digital transmissions must coexist for some time with analog BAS operations in order to make the transition to ATV -- a fact that most of the commenters overlook in exaggerated claims for a "digital world."[11/] Studio signals must be relayed to both NTSC and HDTV transmitters, which may not be located in the same place due to interference and other limitations. Some cases, particulary sports programming, may require two different live shots (one NTSC and one ATV) to be relayed at the same event. The failure to use HDTV BAS support for HDTV main channel programming would forfeit the advances of HDTV.

In light of the technical realities of digital BAS, COMSAT's and TRW's proposals to shrink BAS spectrum to 12 MHz channels are unrealistic. They seek low cost or cost-free MSS access to 2 GHz spectrum on the basis of BAS technology that

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11/ See, e.g., Comments of Loral/Qualcomm, at 15; see generally In the Matter of Advanced Television Systems and their Impact Upon the Existing Television Broadcasting Service, (Memorandum Opinion & Order/Third Report & Order/Third NPRM), 7 FCC Rcd 6924, 6937-47 (1992); In the Matter of Advanced Television Systems and their Impact Upon the Existing Television Broadcasting Service, (Second Report & Order/Further Notice of Proposed Rulemaking), 7 FCC Rcd 3340, 3355-58 (1992)

simply does not exist today, and will not exist anytime in the foreseeable future.[12/]

For example, COMSAT has proposed a two-phase process whereby the 1990-1998 MHz band would be reallocated to MSS immediately, thus forcing BAS to operate on 16 MHz channels in the 1998-2110 MHz band. By 2005 (presumably depending on global allocations), COMSAT proposes to further shrink BAS spectrum to the 2025-2110 MHz band and channels of 12 MHz.[13/] In support of its proposal, COMSAT refers to the capabilities of satellite news gathering operations that allegedly can provide contribution quality video in a 6 MHz bandwidth.[14/] However, this is of little relevance to terrestrial BAS operations. Whereas satellite operators are graced with clear paths through which to transmit their signals, terrestrial BAS operators must navigate the impediments of foliage, buildings, and multipath interference along non-engineered paths.[15/]

12/ COMSAT's laboratory tests did not, and could not, take into account the difficulties associated with field operations, where both path loss and multipath effects must be addressed. See Exhibit A, at 2-3.

13/ COMSAT's proposal to move BAS operations first from the 1990-1998 MHz band and then again from the 1998-2025 MHz band, see Comments of COMSAT, ET Docket No. 95-18, at 18-23 (May 5, 1995), has the additional infirmity of being inefficient and even more disruptive than necessary. It would require broadcasters to revamp their transmitters, receivers, and antennas twice, rather than once as envisioned in the Commission's proposal. On this basis as well, the Commission should reject the COMSAT proposal.

14/ See Comments of COMSAT, ET Docket No. 95-18, at 22 n.14.

15/ See Comments of the SBE, ET Docket No. 95-18, at 6.

While terrestrial broadcasters might be able to squeeze studio-to-transmitter immobile transmissions into 6 MHz channels, ENG operations could not be so accommodated. See Exhibit A, at 2-4.

Although innovations in BAS technologies may make possible a reduction in channel bandwidth to 16 MHz or possibly even 15 MHz, expectations beyond this are imprudent.[16/] Sound spectrum management policy must rest on something firmer than quixotic speculation and should not require services to make numerous expensive and inefficient frequency moves.

II. MOTOROLA'S PROPOSAL SEEKS SPECTRUM FOR USES BEYOND THE SCOPE OF THIS PROCEEDING AND IGNORES THE TECHNICAL REALITIES OF BAS.

Motorola urges the Commission to evict BAS users entirely from the 2 GHz band, while, at the same time, urging the Commission to "still provide a home for all needed BAS operations." Comments of Motorola, ET Docket No. 95-18, at 19. These objectives are simply incompatible. Motorola has no support, nor indeed does it even purport to have support, for the notion that broadcasters could conduct all their ENG

16/ The SBE has proposed shaving 2 MHz from each of the seven BAS channels in the 1990-2110 MHz band. See Comments of the SBE, ET Docket No. 95-18, at 8 (May 5, 1995). MSTV and the Joint Commenters believe this proposal is somewhat optimistic, although within the realm of possibility. As the SBE itself notes, operating on 15 MHz channels would be a stretch because the compressed signals on narrower channels would be less robust and not optimally suited to ENG operations. Id. at 5-6. If this is a stretch that is at least conceivable, there is no basis for concluding that 12 MHz (or smaller) BAS channels are technically feasible.

operations in the 6875-7125 MHz or 12.70-13.25 GHz bands. Motorola's proposal further suffers from an obscurity of purpose which, unlike many of the other MSS comments, does not even seem to have MSS as its goal. Instead, Motorola urges on the Commission a destructive course that would have ruinous effects on broadcast auxiliary services for the sake of dubious and sketchy "broadband multimedia wireless applications." Id., at ii.

First and most importantly, Motorola's proposal ignores the fact that the 7 and 13 GHz bands are shared by a variety of services, including cable television providers, and fixed microwave incumbents. See 47 C.F.R. § 2.106. The other services operating in these bands are not simply going to go away to make this spectrum available for displaced BAS operations. Motorola has neither offered to pay the cost of relocating these services nor said where they could be moved. A further problem with this proposal is that a number of prominent would-be MSS providers have asked the FCC to support an ITU global allocation of these bands to MSS.[17/] At the same time that Motorola proposes that BAS move to the 6875-7125 MHz and/or 12.70-13.25 GHz bands, COMSAT, Constellation Communications, and Loral/Qualcomm are trying to secure access

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[17/] See, e.g., Comments of COMSAT, IC Docket No. 94-31, at 13-14 (March 6, 1995) (6875-7075 MHz and 12.75-13.25 GHz bands); Comments of Constellation Communications, Inc., IC Docket No. 94-31, at 6 (March 6, 1995) (6825-7025 MHz band); Comments of Loral/Qualcomm, Inc., IC Docket No. 94-31, at 16-18 (March 6, 1995) (6825-7075 MHz and 12.75-13.25 GHz bands).

to this spectrum on a global basis for MSS in a separate, but related, docket.[18/]

In addition to the unavailability of the 6875-7125 MHz and 12.70-13.25 GHz bands for displaced BAS operations, the Commission should bear in mind that broadcasters currently conduct only limited ENG functions in these bands. Broadcasters use these bands principally to support other broadcast auxiliary functions, such as studio-to-transmitter links and intercity relays.

As a practical matter, the propagation characteristics associated with these higher bands are unsuitable for ENG operations. In fact, as broadcasters have commented in the related proceeding dealing with possible broadcast auxiliary use of the 4660-4685 MHz band, even frequencies in the 4 GHz band present significant operational challenges to the transmission of ENG signals because ENG transmissions originate from the field, frequently under far

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[18/] It is difficult to gauge the seriousness of Motorola's proposal for a number of reasons. In addition to the conflicting proposal set forth in the WRC-95 docket, Motorola's cost estimates for a relocation of BAS into these bands are grossly inaccurate. COMSAT's cost estimates for relocating BAS operations to the 2110-2145 MHz band, which are based on realistic assessments, cast doubt on Motorola's methodology. Compare Comments of COMSAT, ET Docket No 95-18, at 13 (estimating cost of relocating BAS from the 1990-2025 MHz band to be $275 million) with Comments of Motorola, ET Docket No. 95-18, at Appendix II, Table 1 (estimating cost of relocating BAS from the 1990-2025 MHz band to be $54 million).

less than optimal operating conditions.[19/] It would be even more difficult to conduct ENG activities in the 7 and especially 13 GHz bands.

The Jones study (submitted by Motorola with its comments) significantly underestimates the cost of relocating BAS. This is demonstrated by the cost analysis prepared for the NAB and attached hereto as Exhibit B. The NAB analysis was designed to respond to the assumptions and conclusions of the Jones study only and should not be used to predict the actual costs of a BAS move, as these costs depend on a number of factors not compassed by either study. What the NAB study shows is that, first, the Jones study understates the total number of incumbent facilities that would need to be relocated. Dane E. Ericksen, "Estimate of Relocation and Retrofit Costs for the 2 GHz Television Broadcast Auxiliary Band in Order to Accommodate MSS," at 1-3 (June 15, 1995). Second, the Jones study underestimates the cost of certain equipment, including fixed 7 GHz and 13 GHz transmitting and receiving antennas, fixed rack-mounted 7 GHz and 13 GHz receivers, ENG equipment, and associated application and engineering costs. Id. at 3-6. Perhaps most importantly, the Jones study presupposes unrealistic (and unattainable)

19/ See Joint Comments, ET Docket No. 95-18, at 16; see also Comments of MSTV and Other Major Television Broadcasting Entities, ET Docket No. 94-32, at 7-9, 19-21 (March 21, 1995); Comments of MSTV, ET Docket No. 94-32, at 6-7 (June 15, 1994).

efficiency gains based on assumptions regarding the potential loading characteristics of digital equipment. Id. at 6-7.

In sum, Motorola's proposal to relocate BAS operations to the 7 GHz or 13 GHz bands builds from insupportable assumptions to an unworkable result. In Motorola's zeal to reserve spectrum for assorted new ventures, having little or nothing to do with MSS, it would dismantle a critical support of a free, universally available and hugely popular television service. The Commission should reject this proposal in favor of its original plan to relocate displaced BAS operations to the 2110-2145 MHz band, if relocation is necessary. Notice, at ¶ 10. The Joint Commenters recognize that spectrum reallocations are sometimes necessary to permit new services to develop. However, it would be folly to cripple a growing and healthy service, BAS, simply to make that development easier for a handful of companies. This is particularly true where the new services are as undefined as those Motorola would offer.

III. ALTERNATIVE PROPOSALS DEPEND ON NON-EXISTENT AND IMPRACTICAL GLOBAL ALLOCATIONS.

The present global MSS allocation is in the 1980-2010 MHz and 2170-2200 MHz bands. Given the consensus that MSS requires global allocations, proposals to dedicate the 2010-2025 MHz band to MSS operations assume an additional global allocation of 15 MHz for each of MSS uplink and downlink purposes. However, COMSAT admits that the ITU appears unlikely to approve this additional allocation at WRC-

95.[20/] In assessing the merits of alternative proposals that are hugely disruptive and speculative, it is important to keep in mind that the harm done to broadcast auxiliary and other services will be for naught if the ITU fails to make a global allocation coextensive with the proposed 35 MHz MSS uplink allocation contemplated in this proceeding. As indicated in comments filed in a companion docket, there is substantial doubt regarding the receptivity of the ITU to a new MSS allocation in the 2010-2025 MHz band.[21/] Given the purportedly global nature of MSS, it would make little sense to make a domestic allocation of this band -- with the concomitant dislocation such an allocation would cause to incumbents in the 2010-2025 MHz and 2110-2145 MHz bands -- in the absence of a formal ITU allocation. Indeed, several commenters within the MSS industry support this point of view. See Comments of Loral/Qualcomm, Inc., ET Docket No. 95-18, at 7-8 (May 5, 1995); see also Comments of TRW, Inc., IC Docket No. 94-31, at 24 (March 6, 1995).

The Commission should weigh the speculative prospect of a new global MSS spectrum allocation in the 2010-2025 MHz band against the proven importance of broadcast auxiliary services, the proven demand for BAS spectrum, and the cost and difficulty of relocating these operations to another frequency

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[20/] See Comments of COMSAT, ET Docket No. 95-18, at 7 ("[W]e believe that the chances of securing new MSS global allocations at WRC-95 are not very good.").

[21/] See IC Docket No. 94-31 and Joint Comments, at n.9.

band. Simply put, the Commission should not allocate additional spectrum domestically for MSS until the international community has endorsed new MSS spectrum allocations. This means waiting for the results of WRC-95 before taking any firm position on the domestic reallocation of the 1990-2025 MHz band.

CONCLUSION

MSTV and the Joint Commenters have no wish to impede or otherwise delay the availability of new communications services, such as PCS and MSS. However, we urge that the public and the broadcasters that serve it not be forced to pay for these services through sacrifices in the quality and depth of the existing broadcast television service. The plans put forward by COMSAT and Motorola are significantly underprotective of incumbent BAS in the 2 GHz band. Motorola's proposal in particular is far-fetched in terms of its technical assumptions and fails even minimally to satisfy its burden of showing why the new services it intends to offer are worth the dismantling of BAS. The public relies on television broadcasters for vital news and information -- services made possible through BAS operations. The Commission should not adopt any spectrum allocation scheme for MSS that could seriously undermine the quality of a known public good -- free, universal, locally-based, over-the-air broadcast television service -- for the most uncertain benefits.

In consequence, should it become necessary to relocate BAS from the 1990-2025 MHz band, the Commission should reject these proposals and adhere to its original proposal to relocate these services in the 2110-2145 MHz band, with the MSS industry underwriting all costs associated with the relocation plan.

Respectfully submitted,

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June 21, 1995

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Exhibit A

ORIGINAL

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Consulting Engineer

ENGINEERING STATEMENT ON BEHALF OF MSTV IN SUPPORT OF REPLY TO COMMENTS OF COMSAT CORPORATION
ET DOCKET NO. 95-18
RM-7927

This engineering statement has been prepared on behalf of the Association for Maximum Service Television, Inc. ("MSTV") in support of a reply to the *Comments* of COMSAT Corporation in the matter of *Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service.*

The heavily used 2 GHz Broadcast Auxiliary Service ("BAS") band (1990 - 2110 MHz) divides 120 MHz into six channels, each 17 MHz in width and one channel, 18 MHz in width. COMSAT Corporation ("COMSAT"), through its COMSAT Mobile Communications division, has proposed to reduce the Broadcast Auxiliary Service ("BAS") allocation in the 2 GHz band from 120 MHz to 85 MHz (2025 - 2110 MHz) in two phases. In Phase One, to be in place by 1998 to permit use by global Mobile Satellite Service ("MSS") systems, 8 MHz (1990 to 1998 MHz) would be deleted from the BAS, reducing each of the seven channels to a uniform 16 MHz band width. In Phase Two, to be in place by 2005, broadcasters would be required to convert to digital systems in a channel band width of 12 MHz. As described below, such band width would be unacceptable for the BAS.

Reduction in channel band width from 17 or 18 MHz to a uniform 16 MHz is supported by COMSAT with the report of a laboratory test of the effect of reducing frequency deviation from the presently employed 4 MHz to 3.5 MHz. The laboratory test indicates a degradation of no more than 1.4 dB in video and audio signal-to-noise ratio; however, the laboratory test does not reflect the propagation environment actually encountered by Electronic News Gathering (ENG) systems. Path loss, simulated by the addition of noise in the COMSAT laboratory test, is certainly of prime importance, but multipath effects do not lag far behind. To understand the impact of reduced deviation, tests would have to be performed in the real-world propagation environment where both path loss and multipath effects could be evaluated.

Band width reduction runs contrary to the requirements of a distribution system such as ENG. Quality of the received signal must be sufficiently good to permit editing with its associated multiple recording passes. The concatenated program cannot be as good as the original material, so it must be of sufficiently high quality that it can tolerate some degradation without contrasting with studio origination or received network programming.

Of additional extreme importance to consideration of reduced channel band width is the impact on offset operation. In a number of markets, and particularly in Los Angeles and New York, several ENG systems are often used to cover the same news event. Operating conventionally on the same or adjacent channels results in unacceptable interference. To avoid the chaos created by such operation, broadcasters, in cooperation